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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,468	02/24/2005	Thomas Genger	12810-00027-US	3829
23416 7590 05/18/2007 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			EXAMINER KEYS, ROSALYND ANN	
			ART UNIT 1621	PAPER NUMBER
			MAIL DATE 05/18/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/525,468

Applicant(s)

GENGER ET AL.

Examiner

Rosalynd Keys

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Status of Claims***

1. Claims 1-20 are pending.

Claims 1-20 are rejected.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 19 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Although the specification and drawings show and describe a bottom evaporator (see figure 1 and page 8, line 40); and the specification discloses maintaining the reaction mixture in the boiling state in the reaction zone (see page 1, lines 14 and 15), there is no disclosure that the maintenance of the reaction mixture in the boiling state in the reaction zone is done by the bottom evaporator.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 8, 9, 11-13, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by W. Gey et al. (US 3,439,041), for the reasons given in the previous office action, mailed September 27, 2006.

6. Claims 1-6, 8-13, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Rapoport et al. (US 3,957,876), for the reasons given in the previous office action, mailed September 27, 2006.

#### **Claim Rejections - 35 USC § 103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence

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to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over W. Gey et al. (US 3,439,041) alone or in view of Rapoport et al. (US 3,957,876) and Richard J. Lewis (Hawley's Condensed Chemical Dictionary, twelfth edition, 1993, page 1139).

Gey et al. teach a liquid phase process wherein cyclohexane is oxidized with air, which is supplied through three separate lines (see entire disclosure, in particular column 3, lines 51-70; column 4, lines 50-62 and figure 2). The unreacted cyclohexane is recycled.

Gey et al. fail to teach the use of 20-40 theoretical plates in their rectification column.

Rapoport et al. teach a process for the oxidation of cyclohexane wherein an oxygen containing gas is fed as more than one zone (see entire disclosure, in particular column 2, line 14-39; column 3, lines 5-35; and column 4, lines 18-54). The reactor used by Rapoport et al. contains 21 equally spaced theoretical plates (see column 4, lines 1-32).

Lewis teaches what a theoretical plate is and discloses that as many as 100 theoretical plates are used in laboratory and industrial operation (see page 1139). Lewis also discloses that the effectiveness of a fractionating column is measured in terms of theoretical plates.

One having ordinary skill in the art at the time the invention was made would have found the use of theoretical plates in the reactor of Gey et al. obvious, since Rapoport et al. teach that theoretical trays may be used in a reactor which is suitable for the oxidation of cyclohexane.

One having ordinary skill in the art at the time the invention was made would have been motivated to use as many as a hundred theoretical plates, as disclosed by Lewis, depending upon the degree of separation desired.

Gey et al. do not specifically teach the limitations of claims 19 and 20. However, Gey et

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al. do teach the use of an evaporator, which contains a heat-exchange fluid (see column 5, lines 25-50). It is also taught that the cyclohexane is vaporized (see column 5, lines 25-50). Further, the reaction zone temperature is within the claimed range (see column 3, lines 61-67). Thus, although Gey et al. do not disclose that their evaporator is for maintaining the reaction mixture in the boiling state and the evaporator is not a bottom evaporator. The apparatus disclosed by Gey et al. functions the same as the apparatus taught by the instant invention, i.e. Gey et al. maintains a reaction temperature within the claimed reaction range and utilizes an evaporator to obtain cyclohexane in vapor form. Thus, the positioning of the evaporator in the instant invention is an obvious matter of design choice.

#### ***Response to Amendment***

##### Specification

11. The objection to the specification is withdrawn.

#### ***Response to Arguments***

Applicant's arguments filed February 27, 2007 have been fully considered but they are not persuasive.

The Applicants argue that external heat input from a bottom evaporator is not provided in the processes described in Gey and Rapoport and is thus not taught nor suggested by Gey or Rapoport. Further, a notable dilution effect due to condensed cyclohexane and a high content of useful product in the material discharged from the reactor is not to be expected by this means. For the above reasons, these rejections should be withdrawn.

This argument is not persuasive. First, only claims 19 and 20 disclose the presence of a bottom evaporator. Second, as disclosed in the rejection above although Gey et al. do not teach a bottom evaporator, Gey et al. do teach an apparatus which functions equivalently to

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the claimed bottom evaporator (see column 5, line 25 to column 6, line 19). Further, Gey et al. do teach condensing the cyclohexane (see for example column 4, lines 50-60) and Gey obtains oxidized products in high yield (see column 1, line 68 to column 2, line 5).

For the above reasons, the previous rejections of claims 1-17 are maintained. New claims 17-20 are rejected for the reasons given above.

### **Conclusion**

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

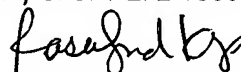
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M, W & F 5:30-7:30 am & 1-5 pm; T & Th 5:30 am-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richter Johann can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rosalynd Keys  
Primary Examiner  
Art Unit 1621

May 12, 2007